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To: [Cacho](#)
[Julia](#)
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Date: 5/14/2013 12:25:43 PM
Subject: FW: Air Monitoring at Bridgeton Landfill

Please put with any briefing material LaTonya prepares for me for congressional and state briefings.

Karl Brooks
Regional Administrator
EPA Region 7
913-551-7006

From: Weber, Rebecca
Sent: Tuesday, May 14, 2013 11:31 AM
To: Brooks, Karl
Cc: Hague, Mark; Hammerschmidt, Ron
Subject: Fw: Air Monitoring at Bridgeton Landfill

Per your request..a summary and status on air monitoring

From: Toensing, Don
Sent: Tuesday, May 14, 2013 11:06:02 AM
To: Weber, Rebecca
Subject: Air Monitoring at Bridgeton Landfill

Got the following information from Chris Nagel on air monitoring:

MDNR collects data on benzene, H2S, and Odor twice per day using hand held monitors at 12 different locations.

A weekly grab sample (or more often when there are high odors) is collected and analyzed for a longer list of constituents including aldehydes, reduced sulfur

compounds, semi-volatiles, etc.

Comprehensive sampling is conducted periodically for a much longer list of constituents including dioxins and furans. One such sampling was completed last week (results not available yet) and another is planned by the end of the month.

There is also continuous monitoring for CO, SO₂, Gamma detection, VOC's, and H₂S.

Overall, there have been some isolated high readings primarily for H₂S, SO₂, and benzene. The following are some excerpts from MDNR's web page that describe the air sampling in more detail and provide the health departments analysis of the results.

Enhanced Air Sampling and Monitoring During Construction at Bridgeton Landfill

These air sampling and monitoring activities are in addition to the air monitoring being conducted using the department's AreaRae system.

April 22, 2013 - Weekly sampling events begin and will continue through completion of the interim cap on the south quarry. Once per week, the department's contractor conducts a four-hour sampling of two upwind and two downwind locations outside the permitted boundary of the landfill. The event includes VOCs, reduced sulfur compounds and aldehydes. These events are planned to coincide with construction activity at the landfill.

Immediate Sampling Events - Exact locations are determined by a triggering event and local weather conditions. These events are similar to weekly sampling events, the department's contractor conducts a four-hour sampling of two upwind and two downwind locations. The immediate sampling event provides data to evaluate differences in concentrations that occur due to an unexpected event at the permitted facility. These sampling events will include the same compounds as the weekly sampling events.

April 19, 2013 - Daily Monitoring Events begin and will continue through completion of the interim cap on the south quarry. The department's contractor is conducting air monitoring at a minimum of 12 locations using a hand-held hydrogen-sulfide detector, benzene detector and an odor detector. Sampling occurs around the perimeter of Bridgeton Sanitary Landfill at least two times per day and as needed, based upon community complaints received between the two daily cycles.

April 16, 2013 - A comprehensive sampling event began on this date and completion has been postponed due to weather and construction delays. Work to complete this initial comprehensive sampling event is being completed the week of May 6. The department's contractor conducts sampling and the laboratory analyses for [183 compounds](#) from upwind, downwind, source gas and on-site locations including the landfill's gas collection system.

Two of the sampling locations will be close to the perimeter of the landfill, in order to evaluate emissions immediately upwind and downwind of the landfill. Additionally, the department's contractor collects eight samples for odor analysis by the St. Croix olfactory method (ASTM-E679). At least one comprehensive sampling event is planned during the RCP abandonment construction activity. Photo: Air sampling port (F3) on Apr. 16, 2013 after morning downpour.

DHSS review of air monitoring data from the Bridgeton Landfill area, March 16 - April 23, The Department of Health and Senior Services (DHSS) has reviewed air quality screening data collected by the Department of Natural Resources (DNR) at Bridgeton Landfill between March 16 and April 23, 2013. DNR has performed continuous air monitoring at three locations near the landfill since mid-February. DHSS reviews the monitoring data to identify potential public health concerns associated with exposure to hydrogen sulfide, sulfur dioxide, total volatile organic compounds (VOCs) and carbon monoxide (CO) in ambient air near the landfill.

Hydrogen Sulfide

In late April, DNR deployed a new piece of equipment, a Jerome meter, which has the capability of detecting hydrogen sulfide levels separate from levels of reduced sulfur compounds. The AreaRAE monitor, which has been in use since February, detects hydrogen sulfide and other reduced sulfur compounds but does not distinguish between the two. The Jerome meter and the AreaRAE monitor were placed together during a period of high odor. The Jerome meter detected hydrogen sulfide at less than ten parts per billion which is below a level of health concern. At the same time, the AreaRAE monitor detected a mixture of hydrogen sulfide and reduced sulfur compounds at several hundred parts per billion. This level exceeds acute health-based guidelines for hydrogen sulfide alone; however, previous lab analysis showed that the primary reduced sulfur compound in the landfill gas is a compound with similar odor to hydrogen sulfide but lower toxicity.

Sulfur Dioxide

Moderate concentrations of sulfur dioxide were observed intermittently at two of the AreaRAE monitoring locations, west and south of the landfill. Hourly average monitor readings exceeded health-based guidelines for short-term exposure on March 16 through April 2 and April 23 at the monitoring location west of the landfill, next to the Metropolitan Sewer District (MSD) lift station. Sewer gas from the lift station may have contributed to the sulfur dioxide readings at this location. Sporadic sulfur dioxide detections occurred on April 7, 8, and 22 at the monitor south of the landfill. Individuals near these locations on those dates may have experienced transient symptoms such as cough and/or irritation of the eyes, nose, or throat. Sensitive individuals, such as asthmatics or those with other chronic respiratory conditions, are more likely to have experienced symptoms; however, sulfur dioxide concentrations did not approach levels that could result in more serious short-term or long-lasting effects.

Volatile Organic Compounds and Carbon Monoxide

The total VOC data from the AreaRAE monitors do not specify different compounds, and the results of total VOC monitoring were inconclusive due to insufficient data quality. Because benzene has been the primary VOC of public health concern, DNR has requested the subcontractor use an UltraRAE benzene detector going forward for routine monitoring around the landfill to address this issue. DNR is working with DHSS to provide time sensitive data for use in evaluations and future recommendations. In addition, DNR should continue regular air sampling for laboratory analysis of individual VOCs and other compounds. Hourly average CO concentrations were below levels of health concern in all areas.

Recommendations

DHSS continues to recommend that during periods of objectionable odor, sensitive individuals should stay indoors as much as possible, avoid outdoor exercise, and seek medical advice for any acute symptoms. DNR should continue regular air sampling, as recommended by DHSS.